

# IHB100TC



## 100 Watt Triple Output Half Brick DC/DC Converter

**OBSOLETE PRODUCT**  
Contact factory for replacement model

- RoHS Compliant
- 33 - 75V Input Range
- Each Channel Independently Current Limited
- High Efficiency: 88% Typical
- 1500VDC Isolation Between Input and Output
- Operation to 100°C Baseplate Temperature
- 50μS Transient Recovery, 0-90% Load Step
- Primary & Secondary Remote On/Off
- IHB100TC Series Approved to UL/CUL 1950, EN60950

The IHB100TC series triple output standard half brick modules are designed for today's demanding industrial applications. Available in two wide range inputs, these isolated converters offer many features in the standard models. With a complement of safety agency approvals and low noise operations, the converters respond extremely fast to change in load conditions. Inherent in the design are very well-controlled output voltage and minimal need for minimum loading on main (V1) output.



### PRODUCT SELECTION CHART

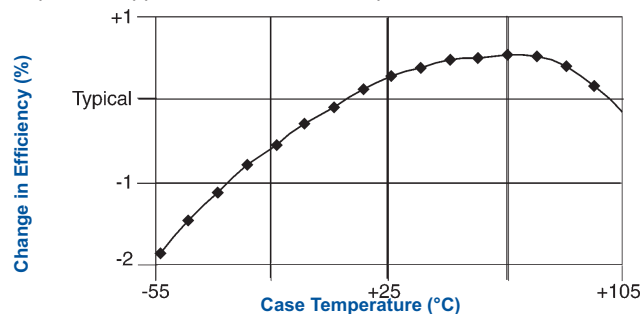
MODEL	INPUT VOLTAGE (VDC)	RATED VOUT (VDC)			RATED MAXIMUM IOUT (A)		
		V1 (±)	V2 (±)	V3 (±)	V1(±)	V2(±)	V3(±)
IHB100T480312C	48 (33-75)	3.3	12	12	30	4.2	4.2
IHB100T480315C	48 (33-75)	3.3	15	15	30	3.4	3.4
IHB100T480512C	48 (33-75)	5.1	12	12	20	4.2	4.2
IHB100T480515C	48 (33-75)	5.0	15	15	20	3.4	3.4

### ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration	Continuous
Baseplate Temperature	+100°C
Storage Temperature	+125°C
Input to Output Isolation	1500 VDC

### EFFICIENCY vs TEMPERATURE

T<sub>CASE</sub> = +40°C, nominal input voltage, nominal load, recommended external components applied, unless otherwise specified.\*



# SPECIFICATIONS, ALL MODELS

Specifications are at  $T_{CASE} = +40^{\circ}C$  nominal input voltage unless otherwise specified.

INPUT	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	Voltage Range		33	48	75	V <sub>DC</sub>
	Reflected Ripple Current	Peak - Peak			370	mA
	Input Ripple Rejection	DC to 1KHz	50	60		dB
	Maximum Input Current	Output Power = 100W $V_{IN} = 30V$			5	A
	No Load Power Dissipation	$P_{OUT} = 0, V_{IN,Min} < V_{IN} < V_{IN,Max}$			6	W
	Inrush Charge				0.247	mC
	Quiescent Operating Current					
	Primary On/Off Disabled			7.5	10	mA
	Secondary On/Off Disabled			15	20	mA

GENERAL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	
	<b>ISOLATION</b>						
	Input to Each Output	Peak Test	1500			V <sub>DC</sub>	
	Input to Baseplate		1500			V <sub>DC</sub>	
	Channel to Channel	Any Channel to Any Channel	500			V <sub>DC</sub>	
	Resistance, Input - Output		10			MΩ	
	Capacitance, Input - Output			2000		pF	
	Leakage Current	$V_{ISO} = 240V_{AC}, 60Hz$		180		μA, rms	
	<b>GENERAL</b>						
	Set Point Accuracy	$V_{IN} = \text{Nominal}, 50\% \text{ Load}$			1	%	
	Turn-on Time	Within 1% of Nominal $V_{OUT}$		3.5	5	mSec	
	Remote On/Off Control Inputs						
	Primary	Open Collector/Drain					
	Sink Current-Logic Low	$V_{IN} = V_{MAX}$			7	mA	
	V <sub>low</sub>				0.8	V	
	V <sub>high</sub>				Open Collector		
	Secondary	Open Collector/Drain					
	Sink Current-Logic Low				100	μA	
	V <sub>low</sub>				0.4	V	
	V <sub>high</sub>				Open Collector		
	External Synchronization Input						
	Frequency		440		520	KHz	
	Pulse Width		150		320	nSec	
	Source Impedance				47	Ω	
	Input High Voltage		4		5	V	
	Input Low Voltage		0		1	V	
	Input Impedance			470		Ω	
	Switching Frequency		470	480	490	KHz	
	Weight				3 (85)	oz (g)	
	<b>TEMPERATURE</b>						
Operation/Specification	Case Temperature	-40		+100	°C		
Storage		-55		+125	°C		
Shutdown		+100		+115	°C		
Thermal Impedance	Case to Ambient		8.2		°C/W		

IHB100T480312C OUTPUT	PARAMETER	CONDITIONS	V1			V2			UNITS
			Min	Nom	Max	Min	Nom	Max	
	Output Power	Total Combined O/P Power = 100 Watts Max		50	100		25	50	W
	Set Point Voltage	$I_{O,Nom}$		3.3			12.2		V
	Output Current, $I_{OUT}$		0.5	15	30.0	0	2.1	4.2	A
	Output Ripple, p-p	DC to 20MHz*		100	200		150	500	mV
	Output Adjust Range	*	3.15		3.80	Dependent on V1			V
	Output Temperature Drift			.02	.05		.02	.05	%/°C
	Line Regulation	$V_{IN,Min} < V_{IN} < V_{IN,Max}$ $I_O = I_{O,Nom}$		0.05	0.10		1.0	2.0	%
	Load Regulation	Min Load to Rated Load		0.50	1.00	See Regulation Curves		See Regulation Curves	%
	Current Limit Inception	Other Outputs Min Load		38			6.0		A
	Short-Circuit Current			30	38		5.0	6.0	A
Transient Response	50 to 100% Load Step								
Peak Deviation			150	250				mV	
Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$		35	50				μSec	
Overvoltage Limit			4.2	5.0				V	
Efficiency	$I_{OUT1} = 15A, (I_{OUT2} + I_{OUT3}) = 4.2A$ F.L. $V_{IN} = \text{Nominal}$		85	86				%	

\* See Application Notes available on the web at [www.murata-ps.com](http://www.murata-ps.com)

# SPECIFICATIONS, ALL MODELS

Specifications are at  $T_{CASE} = +40^{\circ}C$  nominal input voltage unless otherwise specified.

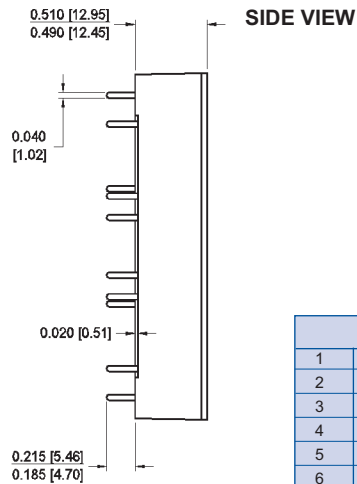
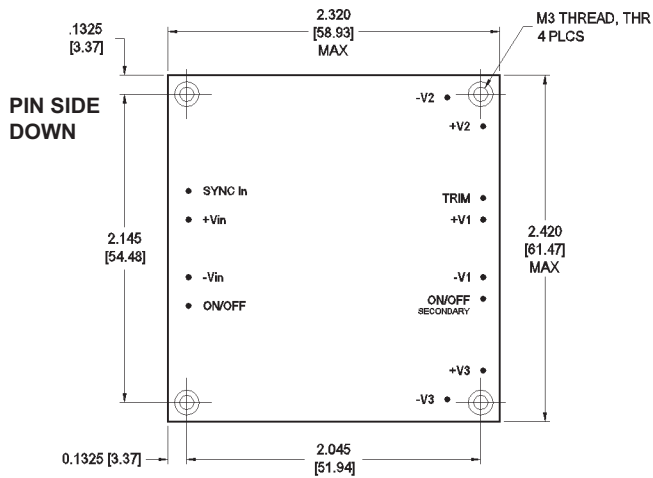
PARAMETER	CONDITIONS				V1			V2					
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max			
IHB100T480315C OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Maximum						25	50		25	50	W
	Set Point Voltage	$I_{O,Nom}$						15.85			15.85		V
	Output Current, $I_{OUT}$		0.5	15	30.0	0	1.66	3.33	0	1.66	3.33		A
	Output Ripple, p-p	DC to 20MHz*						125	500		125	500	mV
	Output Adjust Range	*			3.15			Dependent on V1					V
	Output Temperature Drift					.02	.05	.02	.05		.02	.05	%/°C
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$				0.05	0.10	1.0	2.0		1.0	2.0	%
	Load Regulation	Min Load to Rated Load			0.50	1.0		See Regulation Curves		See Regulation Curves			%
	Current Limit Inception	Other Outputs Min Load				38		5.0			5.0		A
	Short-Circuit Current					30	38	4.0	5.0		4.0	5.0	A
	Transient Response	50 to 100% Load Step											
	Peak Deviation					150	250						mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$				35	50						µSec
	Overvoltage Limit				4.2		5.0						V
	Efficiency	$I_{OUT1}=15A, (I_{OUT2}+I_{OUT3}) = 3.4A$ F.L. $V_{IN}$ =Nominal			85	86							%

PARAMETER	CONDITIONS				V1			V2					
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max			
IHB100T480512C OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Combined						25	50		25	50	W
	Set Point Voltage	$I_{O,Nom}$						12			12		V
	Output Current, $I_{OUT}$		0.5	10	20	0	2.1	4.2	0	2.1	4.2		A
	Output Ripple, p-p	DC to 20MHz*						150	500		150	500	mV
	Output Adjust Range	*			4.75		5.50	Dependent on V1					V
	Output Temperature Drift					.02	.05	.02	.05		.02	.05	%/°C
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$				0.05	0.10	1.0	2.0		1.0	2.0	%
	Load Regulation	Min Load to Rated Load			0.50	1.0		See Regulation Curves		See Regulation Curves			%
	Current Limit Inception	Other Outputs Min Load				26.0		6.0			6.0		A
	Short-Circuit Current					20.0	26.0	5.0	6.0		5.0	6.0	A
	Transient Response	50 to 100% Load Step											
	Peak Deviation					200	300						mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$				35	50						µSec
	Overvoltage Limit				6.0		7.0						V
	Efficiency	$I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A$ F.L. $V_{IN}$ =Nominal			86	87							%

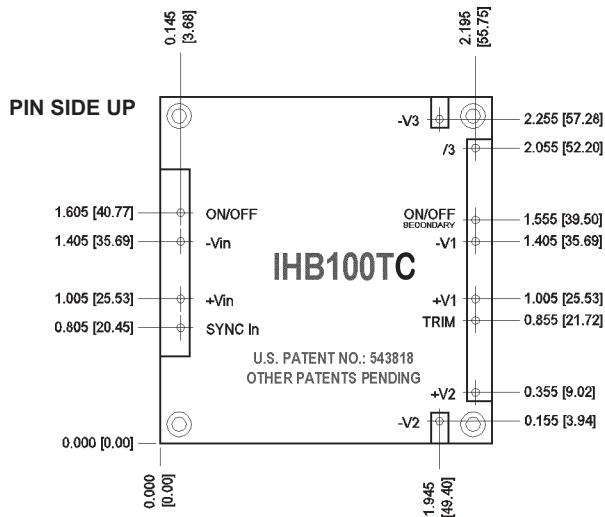
PARAMETER	CONDITIONS				V1			V2					
		Min	Nom	Max	Min	Nom	Max	Min	Nom	Max			
IHB100T480515C OUTPUT	Output Power	Total Combined O/P Power = 100 Watts Max						25	50		25	50	W
	Set Point Voltage	$I_{O,Nom}$						15.3			15.3		V
	Output Current, $I_{OUT}$		0.5	10	20	0	1.66	3.33	0	1.66	3.33		A
	Output Ripple, p-p	DC to 20MHz*						125	500		125	500	mV
	Output Adjust Range	*			4.60		5.50	Dependent on V1					V
	Output Temperature Drift					.02	.05	.02	.05		.02	.05	%/°C
	Line Regulation	$V_{IN,Min} \leq V_{IN} \leq V_{IN,Max}$ $I_O = I_{O,Nom}$				0.05	1.0	1.0	2.0		1.0	2.0	%
	Load Regulation	Min Load to Rated Load			0.05	1.0		See Regulation Curves		See Regulation Curves			%
	Current Limit Inception	Other Outputs Min Load				26.0		5.0			5.0		A
	Short-Circuit Current					20.0	26.0	4.0	5.0		4.0	5.0	A
	Transient Response	50 to 100% Load Step											
	Peak Deviation					200	300						mV
	Settling Time	$V_{OUT}$ , 1% of $V_{OUT,Nom}$				35	50						µSec
	Overvoltage Limit				6.0		7.0						V
	Efficiency	$I_{OUT1}=10A, (I_{OUT2}+I_{OUT3}) = 4.2A$ F.L. $V_{IN}$ =Nominal			86	87							%

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# MECHANICAL



PIN CONNECTIONS	
1	PRIMARY ON/OFF
2	-VIN
3	+VIN
4	SYNC IN
5	-V2
6	+V2
7	TRIM
8	+V1
9	-V1
10	SECONDARY ON/OFF
11	+V3
12	-V3



## NOTES:

All dimensions are in inches (millimeters).

PIN PLACEMENT TOLERANCE:  $\pm 0.005$ "

MECHANICAL TOLERANCE:  $\pm 0.015$ "

Marked with: specific model ordered, date code, job code.

**MATERIAL:** Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.

## THROUGH-HOLE SOLDERING INFORMATION

These devices are intended for wave soldering or manual soldering.

**They are not intended to be subject to surface mount processes under any circumstances.**

The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of 260°C for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed 175°C. Care should be taken to control manual soldering limits identical to that of wave soldering.



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